S720G

SERVICE MANUAL

CTX The Monitor Specialists

EDITION 1
Aug.. 2003

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1. SCOPE

This specification defines the design and performance requirements for the 17" SXGA TFT LCD display monitor.S720G

Feature	Description
1	Universal input AC/DC power supply inside the monitor
2	Analog RGB interface (VGA) 30~80KHz, 59~75Hz, 135MHz
3	Digital Visual interface(**DVI-D**) TMDS 1 Channel 165 MHz
4	17" SXGA 1280*1024, TFT LCD panel
5	Function keys * 5 : Power On/Off, ESC, △ (up), ▽ (down)↵(enter)
6	Direct Acess function keys : △ for ◐ contrast function, ▽ for ☼ brightness function , ESC for audio mute function
7	Green/Amber LED indicator for power on/power saving
8	Plug & play support with DDC2B protocol installed.
9	Power saving mode compliant with Energy Star
10	OSD (on screen display) MENU operation
10.1	Brightness adjustment
10.2	Contrast adjustment
10.3	Auto tune function (VGA)
10.4	Color selection
10.5	Image adjustment
10.6	Position adjustment
10.7	Language selection
10.8	Reset function
10.9	Source selection(**DVI/VGA**)
10.10	1W * 2 Audio function inside the monitor
11	Volume adjust by OSD
12	OSD information of input status

2. INPUT REQUIREMENTS

2.1 Input Power

2.1.1. Power Source: 100 ~ 240 Vac, + -10%, 50/60 Hz

2.1.2. Power Consumption:
Normal operating mode
Audio function is operating at max output: ≦ 39W
w/o audio function : ≦ 35W
Power saving mode
Audio function is operating at max output: ≦ 7W
w/o audio function : ≦ 2W

2.1.3. AC Line Drop Out: Power switch off : ≦ 1.5W

2.1.4. AC Wave Distortion: Picture must not disappear while AC 100 V input drop out(10ms, 100%)

2.1.5. In-rush Current: 10% max. permitted

2.1.6. Power Cord:
50 A max at 240 Vac cold start
Detachable, 3P with ground type.

2.2 Display Input

2.2.1. Analog Input RGB Video

Analogue, 0.0 to 0.7 V peak to peak
Separate RGB
Input impedance 75 Ohm
Positive polarity

2.2.1.1 Sync Signal

Separate horizontal & vertical sync (3.3V & 5V)
Low level 0.8 V maximum
High level 2.0 V minimum
Positive or negative polarity

Analog Input Connection

a. Detachable Mini D-sub 15 pin male in two ends signal cable , length 1.8M.
b. A female Mini D-sub 15 pin base.

Pin 1	Red	Pin 9	DDC +5V
Pin 2	Green	Pin 10	Ground
Pin 3	Blue	Pin 11	Ground
Pin 4	No Connection	Pin 12	SDA
Pin 5	Ground	Pin 13	H. Sync
Pin 6	R Return		
Pin 7	G Return	Pin 14	V. Sync
Pin 8	B Return	Pin 15	SCL

2.2.2 Digital Input

Input Interface

DVI-D V.1 TMDS 165MHz 1-Channel

Digital Input connection
DVI-D male

a. Captive cable (length 1.5M) in LCD monitor end , connector in another end.
b. Cable pin assignment

DVI-D 1-Channel Pin Assignment

Pin	Signal Assignment	Pin	Signal Assignment	Pin	Signal Assignment
1	T.M.D.S Data 2-	9	T.M.D.S Data 1-	17	T.M.D.S Data 0-
2	T.M.D.S Data 2+	10	T.M.D.S Data 1+	18	T.M.D.S Data 0+
3	T.M.D.S Data 2 Shield	11	T.M.D.S Data 1 Shield	19	T.M.D.S Data 0 Shield
4	NC	12	NC	20	NC
5	NC	13	NC	21	NC
6	DDC Clock	14	+5V Power	22	T.M.D.S. Clock Shield
7	DDC Data	15	Ground	23	T.M.D.S. Clock+
8	NC	16	Hot Plug Detect	24	T.M.D.S. Clock-

2.3 Audio Input

2.3.1 Audio Input Signal

Right &Left channels.
Input level : 1Vrms(typ), 2Vrms(max)
Input Impedance : 15Kohm

2.3.2 Audio Input Connection

a. Detachable stereo phone head in two ends signal cable.

b. A female stereo phone jack base.

3. ELECTRICAL CHARACTERISTICS

3.1 LCD Panel

3.1.1. Type	17” diagonal, SXGA resolution, color TFT-LCD
3.1.2. Pixel structure	R/G/B sub-pixels in vertical stripes 1280 x 1024 array matrix a-Si TFT active matrix
3.1.3. Gray scale	16 million colors.
3.1.4. Surface treatment	3H hard coating ,anti-static,anti-glare
3.1.5. Backlight	Integral CCFL, type to support field replacement. Life time 30000 hours @ 25C, 50% of initial value.

3.1.6 Pixel Faults

Pixel Faults type \ Model / Project		S730G S720G LIS17G24KC01 LIS17S24KC01
Type	Bright Pixels (Note 1)	≦ 5
Type	Dark Pixels (Note 2)	≦ 5
Type	Fault Pixels / Sub-Pixels(Note 3)	≦ 3
Type	Cluster of type1 or type 2 faults(Note	≦ 2
Type	Cluster of type3 faults (Note4)	≦ 3
Type	Total Pixel Faults	≦ 8

Note 1 : Bright pixels in full black pattern.
Note 2 : Dark pixels in full white pattern
Note 3 : fault Pixel / Sub-Pixel : The pixel or sub-pixel is abnormal but not bright/dark pixel.
Note 4 : Fault Cluster : Two or more Pixels/Sub-pixels with faults within 5 * 5 block of pixels.

3.2 Modes and Timing Comparability

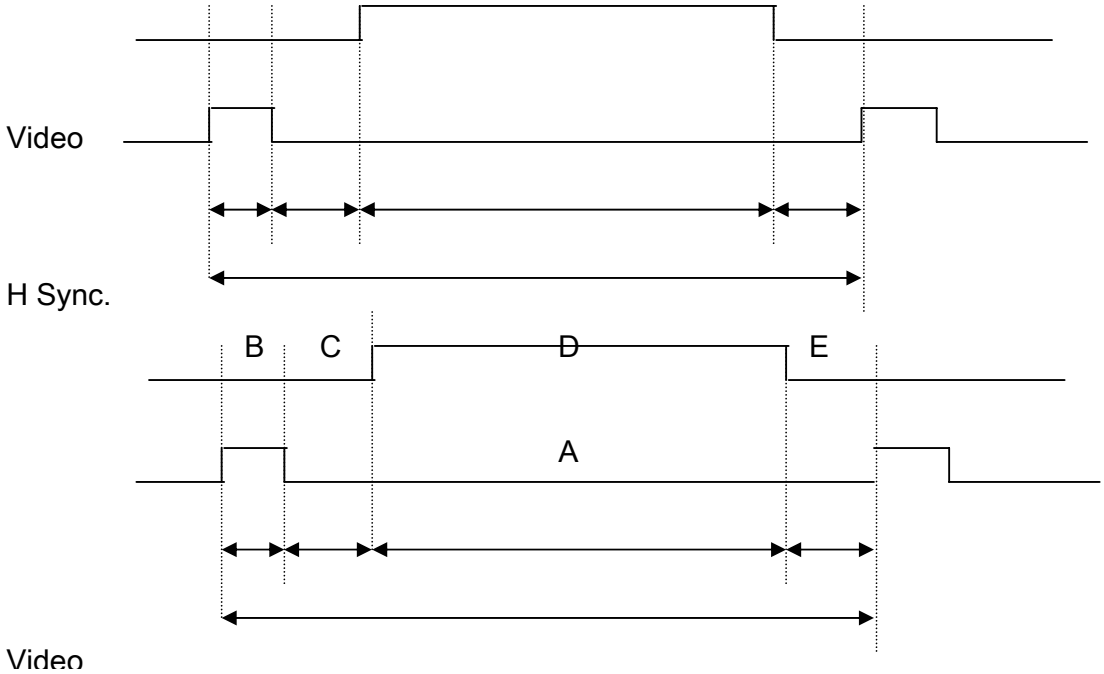
3.2.1Analog Input Supported Timing VESA Standard mode :

Display Format	IBM VGA		VESA	VESA	VESA	VESA	VESA
Horizontal Dots	720	640	640	640	800	800	800
Vertical lines	400	480	480	480	600	600	600
Horizontal Frequency	31.469		37.861	37.5	37.879	48.077	46.875
Vertical Frequency (Hz)	70	59.94	72.809	75	60.317	72.188	75.000
Pixel Rate (MHz)	28.322	25.175	31.5	31.5	40	50	49.5
H. Sync. Polarity	-	-	-	-	+	+	+
A u. S (Period)	31.778		26.413	26.667	26.4	20.8	21.333
B u. S (Pulse Width)	3.813		1.270	2.032	3.2	2.4	1.616
C u. S (Back Porch)	1.907		4.063	3.810	2.2	1.28	3.232
D u. S (Active Area)	25.422		20.317	20.317	20.0	16.0	16.162
E u. S (Front Porch)	0.636		0.763	0.508	1.00	1.12	0.323
V. Sync. Polarity	+	-	-	-	+	+	+
O ms (Period)		16.683	13.735	13.333	16.579	13.853	13.333
P ms (Pulse Width)		0.064	0.079	0.080	0.106	0.125	0.064

Display Format	VESA	VESA	VESA	VESA	VESA	VESA
Horizontal Dots	1024	1024	1024	1152	1280	1280
Vertical lines	768	768	768	864	1024	1024
Horizontal Frequency	48.363	56.746	60.023	67.5	63.981	79.976
Vertical Frequency (Hz)	60.004	70.069	75.029	75	60.013	75.025
Pixel Rate (MHz)	65.0	75	78.75	108	108	135
H. Sync. Polarity	-	-	+	+	+	+
A u. S (Period)	20.667	17.707	16.660	14.815	15.631	12.054
B u. S (Pulse Width)	2.092	1.813	1.219	1.185	1.180	1.067
C u. S (Back Porch)	2.462	1.920	2.253	2.370	2.065	1.837
D u. S (Active Area)	15.754	13.653	13.003	10.667	11.797	9.481
E u. S (Front Porch)	0.369	0.321	0.203	0.593	0.590	0.119
V. Sync. Polarity	-	-	+	+	+	+
O ms (Period)	16.666	14.272	13.238	13.333	16.663	13.329
P ms (Pulse Width)	0.124	0.106	0.050	0.044	0.047	0.038
Q ms (Back Porch)	0.6	0.513	0.466	0.474	0.594	0.475
R ms (Active Area)	15.88	13.599	12.795	12.8	16.006	12.804
S ms (Front Porch)	0.062	0.054	0.017	0.015	0.016	0.012

Timing Chart

Figure. 1 Timing Chart



3.2.2 Digital Input

DVI Support mode

640 * 480 @60Hz
800 * 600 @60Hz
1024*768 @60Hz
1280*1024@60Hz

3.3 Plug & Play DVI support VESA DDC 2B+ standard
DDC 2B data transmission only for I^2C BUS interface card.

3.4 Scanning characteristics	**VGA**	**DVI(DDC description)**	**DVI(Input signal range)**
Horizontal frequency	30KHz to 80KHz	30KHz to 66KHz	30KHz to 80KHz
Refresh rate	59Hz to 75Hz	59Hz to 61Hz	59Hz to 75Hz

3.5 Audio Module

3.5.1. Type : Stereo BTL audio output amplifier with DC volume control with two 1W speakers.

3.5.2. Input Level : 1Vrms

3.5.3. Output Power: 1W * 2 (10% THD, 1KHz)

3.5.4. Total Harmonic Distortion (THD) : 0.3% (Typ.) (0.5W * 2, 1KHz)

3.5.5. Frequency Response ±3dB : 450Hz ~ 20KHz

3.5.6. Channel unbalance (output power): 1dB (max.)

3.6 User Controls and Indicator

3.6.1 Power ON/OFF Switch — The switch control scaler power down and turn off panel.

3.6.2 LED Indicator — The LED color shall indicate power status as shown in paragraph 3.7

3.6.3 OSD

3.6.3.1 Buttons — ESC , ▽ , △ , ⏎

3.6.3.2 OSD Menu Level — See Table 2. S730G/S720G OSD Control Map

3.6.4 Hot Keys Function

3.6.4.1 Contrast (◐) — Press "△ " to pop up ;then press "△ " or "▽ " to adjust Contrast up or down.

3.6.4.2 Brightness (☼) — Press "▽ " to pop up ;then press "△ " or "▽ " to adjust Brightness up or down.

*3.6.4.3 Mute On (🔇) — Press "Esc" directly to disable speakers, while speakers in normal state.

*3.6.4.4 Mute Off (🔊) — Press "Esc" directly to enable speakers, while speakers in audio mute state.
"Esc" key is for Mute On and Off function

*3.6.4.5 In monitor power saving mode — "△ " key is for increasing volume function.
"▽ " key is for decreasing volume function.
"ESC" key is enable or disable audio mute.

*3.6.4.6 Key lock function — Push" ⏎ for 10 sec while the screen has no any OSD showing to Setup "Key lock" functions enable or disable.

Table 2 S720G/S730G OSD Control Map

	Level 1	Level 2	Level 3	Level 4
Direct Adj.	Brightness			
Direct Adj.	Contrast			
Direct Adj.	Audio Mute			
Main Menu	Volume	Adjustment Scale		
	*Auto Tune	*Adjustment Scale		
	Color	9300◦ K		
		6500◦ K		
		User	R/G/B select	Adjustment Scale
	Image	*Clock	*Adjustment Scale	
		*Phase	*Adjustment Scale	
		Smooth	On/Off	
		*Image Position	*H-Position	*Adjustment Scale

			*V-Position	*Adjustment Scale
			*Center	*Adjustment Scale
		OSD Position	H-Position	Adjustment Scale
			V-Position	Adjustment Scale
			Center	Adjustment Scale
	Language	English (select)		
		Deatsch (select)		
		French (select)		
		Spanish (select)		
		Italiano (select)		
		中文 (option)		
	Reset	Yes/No		
	Source	DVI/VGA		

*Function is disable in DVI mode.

3.6.5 Accessory OSD Indications

Signal out of range	An input signal which is outside the range defined in Section 3.4 shall cause the monitor to display a message **Signal Out of Range**.
No Signal Input , Input Source “auto detecting” and power down.	When the signal cable is not plugged into PC or when the horizontal or vertical sync are absent and when the monitor is turned on. After 5 sec isn’t to detect H or V Sync then show “**No Signal Input**” for 3 seconds then show”Auto detecting” message on the OSD for 2seconds,(if first turn on the monitor that will show it around 27 seconds.), and then show ” **Power down**” message on screen 2 sec.And then the monitor shall go to power saving status.

3.7 Power Management

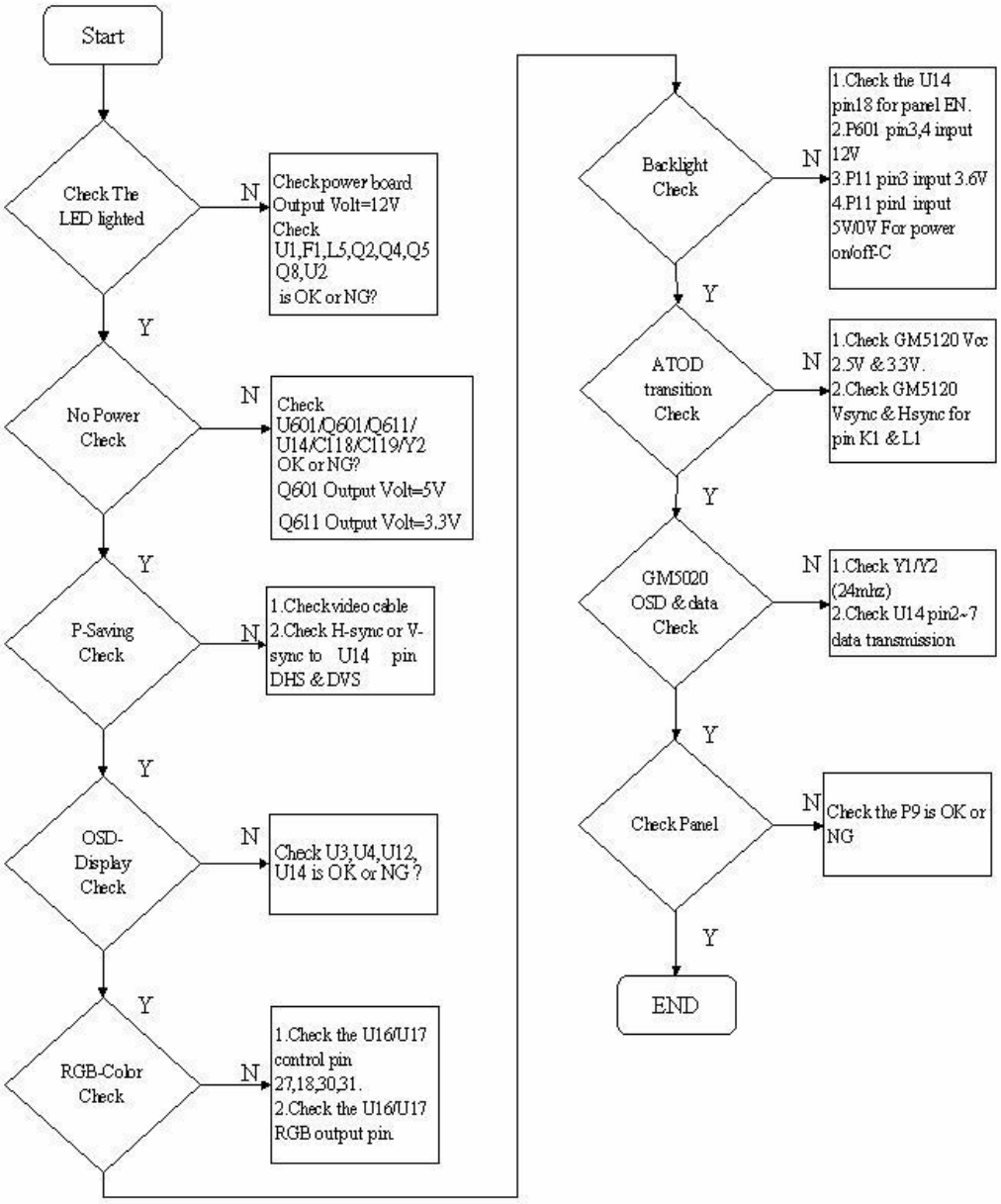
This monitor will meet the low power specification, Including USA governmental requirements
For Energy Star, the NUTEK standard and the VESA DPMS standard which detected the Hori. /Vert. Sync signal from host CPU.
A dual color (green/amber) LED is located on the front bezel to indicate the power management states.

Status		Power consumption	Power management	Picture Recovery time	LED Color
Sync.	Video				
Active	Active	39W max.	On	-	Green
No Sync.	Blanked	≦ 2W (Note.1)	Power saving	≦ 3 sec	Amber

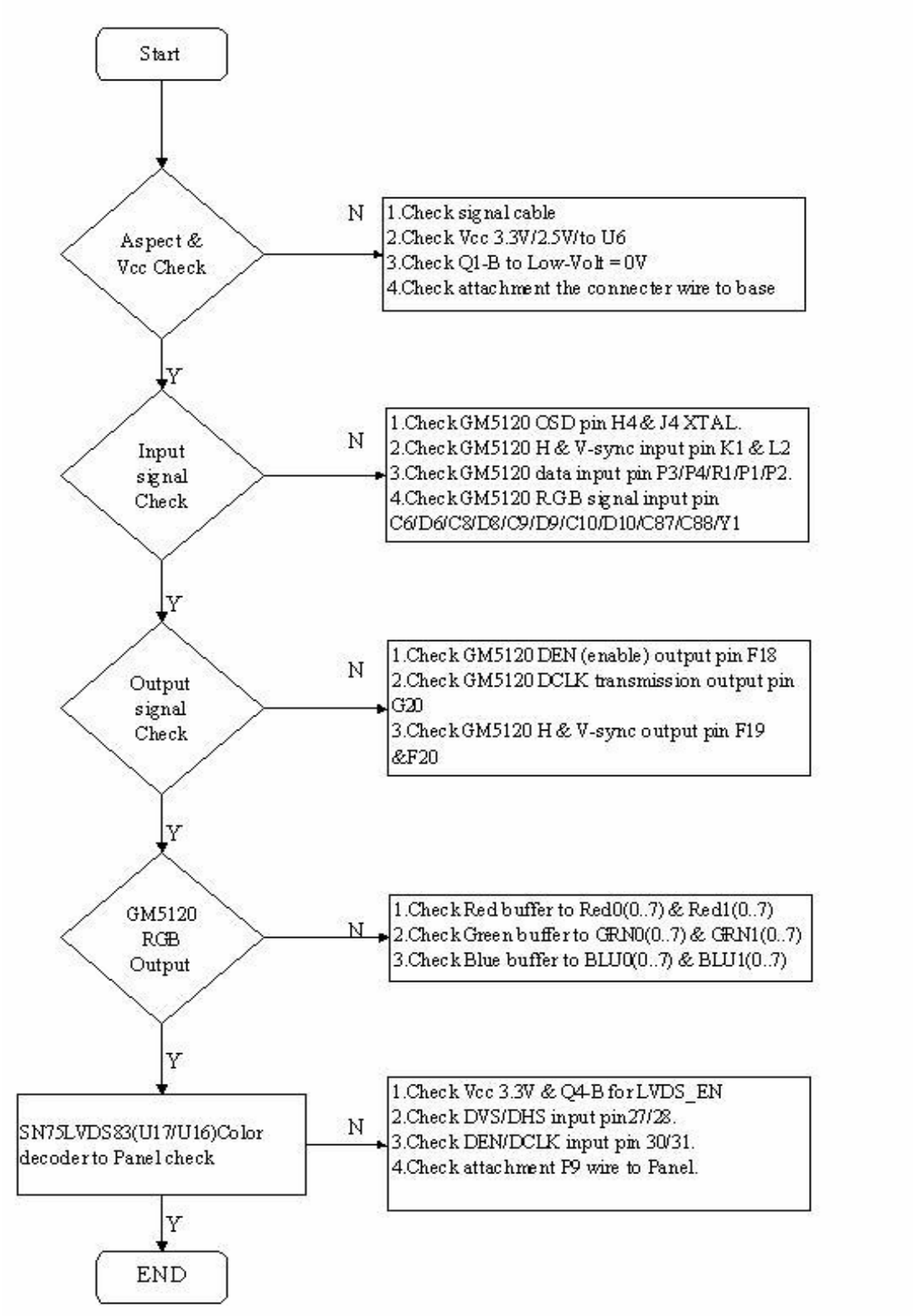
Note. 1 : Audio function is operating at no signal input.
Once “Esc” or “△” or “▽” key initiates under power saving condition, the audio function can be waked up and the power consumption can not be the above definition.

4. TROUBLE SHOOTING

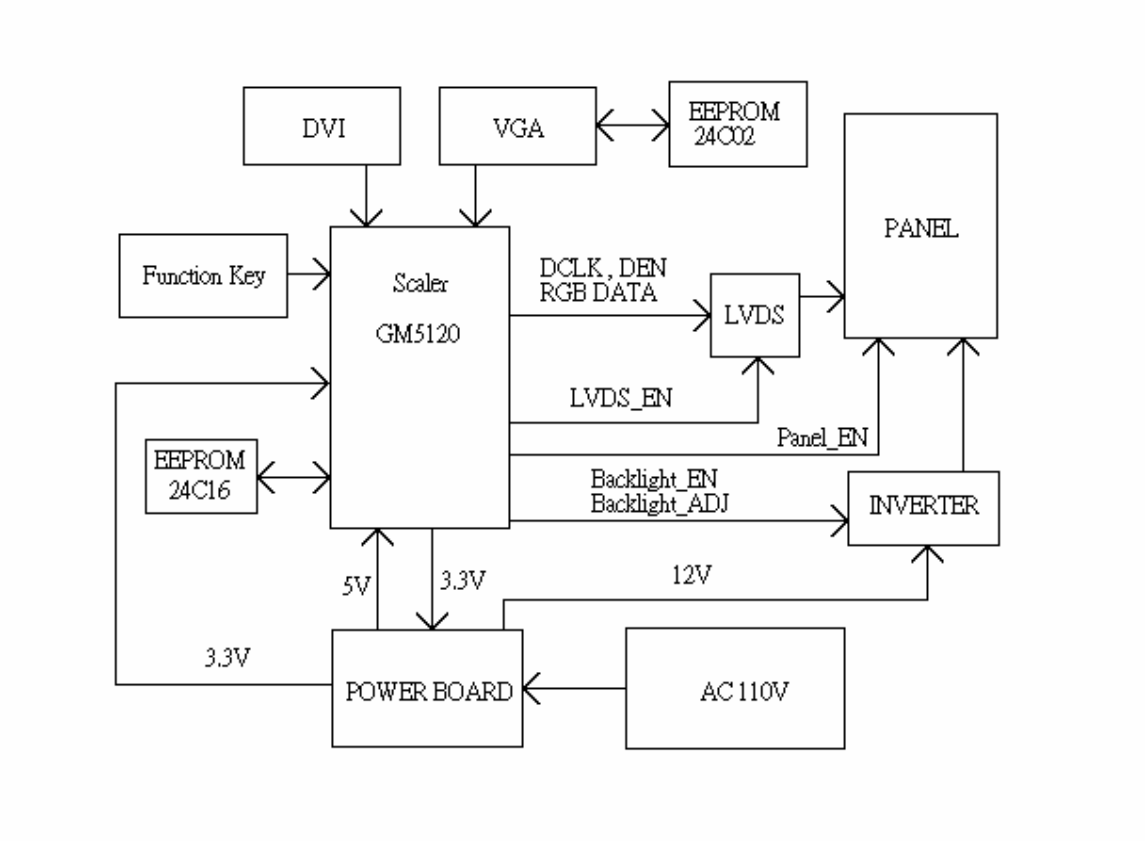
VIDEO DOES NOT APPEAR


Start
Check The LED lighted
N
Check power board Output Volt=12V Check U1,F1,L5,Q2,Q4,Q5 Q8,U2 is OK or NG?
Y
No Power Check
N
Check U601/Q601/Q611/ U14/C118/C119/Y2 OK or NG? Q601 Output Volt=5V Q611 Output Volt=3.3V
Y
P-Saving Check
N
1.Check video cable 2.Check H-sync or V-sync to U14 pin DHS & DVS
Y
OSD-Display Check
N
Check U3,U4,U12, U14 is OK or NG ?
Y
RGB-Color Check
N
1.Check the U16/U17 control pin 27,18,30,31. 2.Check the U16/U17 RGB output pin.
Backlight Check
N
1.Check the U14 pin18 for panel EN. 2.P601 pin3,4 input 12V 3.P11 pin3 input 3.6V 4.P11 pin1 input 5V/0V For power on/off-C
Y
ATOD transition Check
N
1.Check GM5120 Vcc 2.5V & 3.3V. 2.Check GM5120 Vsync & Hsync for pin K1 & L1
Y
GM5020 OSD & data Check
N
1.Check Y1/Y2 (24mhz) 2.Check U14 pin2~7 data transmission
Y
Check Panel
N
Check the P9 is OK or NG
Y
END

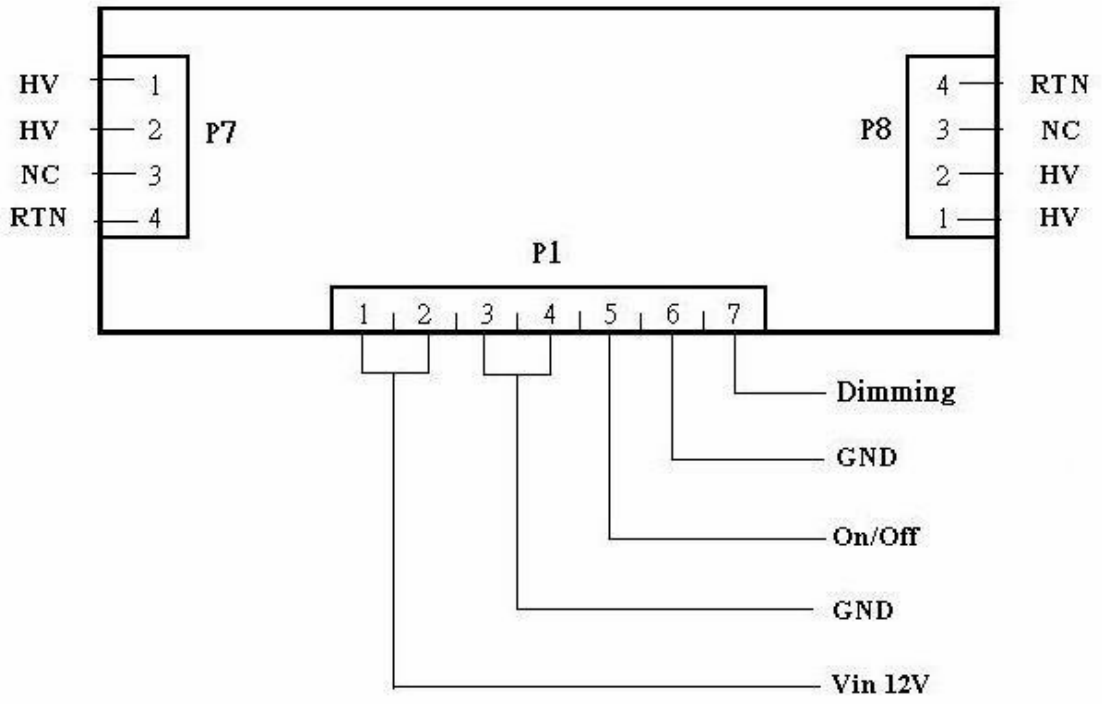
R.G.B is not displayed correctly


Start
Aspect & Vcc Check
N
1.Check signal cable
2.Check Vcc 3.3V/2.5V/to U6
3.Check Q1-B to Low-Volt = 0V
4.Check attachment the connecter wire to base
Y
Input signal Check
N
1.Check GM5120 OSD pin H4 & J4 XTAL.
2.Check GM5120 H & V-sync input pin K1 & L2
3.Check GM5120 data input pin P3/P4/R1/P1/P2.
4.Check GM5120 R.G.B signal input pin C6/D6/C8/D8/C9/D9/C10/D10/C87/C88/Y1
Y
Output signal Check
N
1.Check GM5120 DEN (enable) output pin F18
2.Check GM5120 DCLK transmission output pin G20
3.Check GM5120 H & V-sync output pin F19 &F20
Y
GM5120 RGB Output
N
1.Check Red buffer to Red0(0..7) & Red1(0..7)
2.Check Green buffer to GRN0(0..7) & GRN1(0..7)
3.Check Blue buffer to BLU0(0..7) & BLU1(0..7)
Y
SN75LVDS83(U17/U16)Color decoder to Panel check
N
1.Check Vcc 3.3V & Q4-B for LVDS_EN
2.Check DVS/DHS input pin27/28.
3.Check DEN/DCLK input pin 30/31.
4.Check attachment P9 wire to Panel.
Y
END

5. SYSTEM BLOCK DIAGRAM

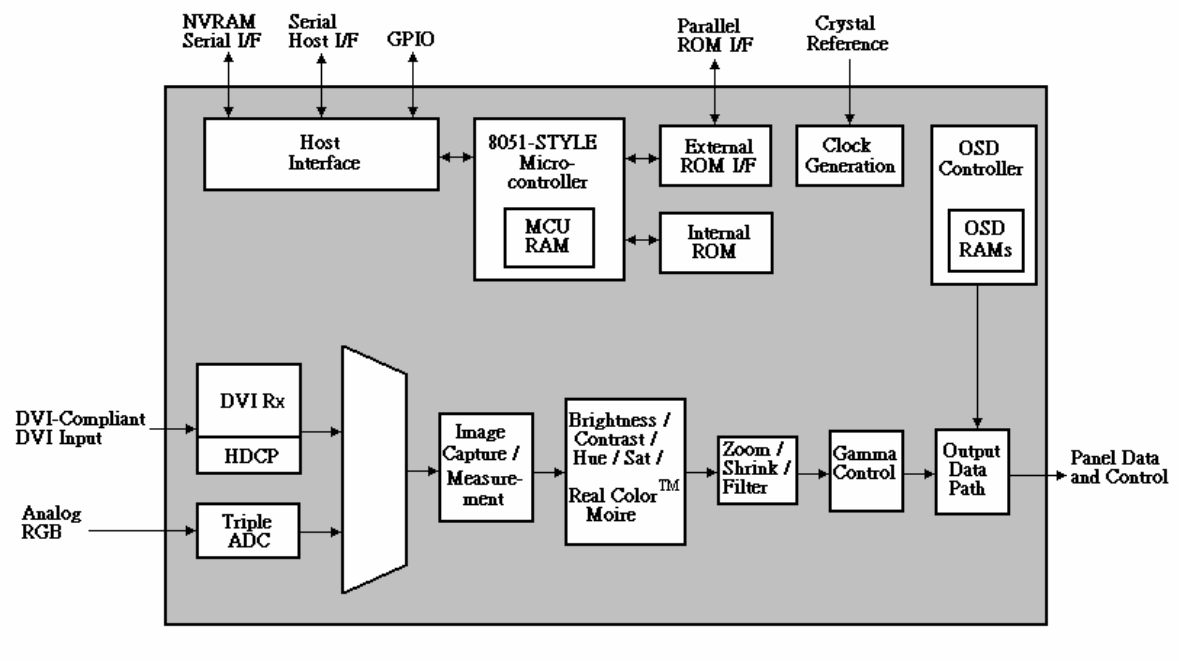


6. inverter board I/O connections



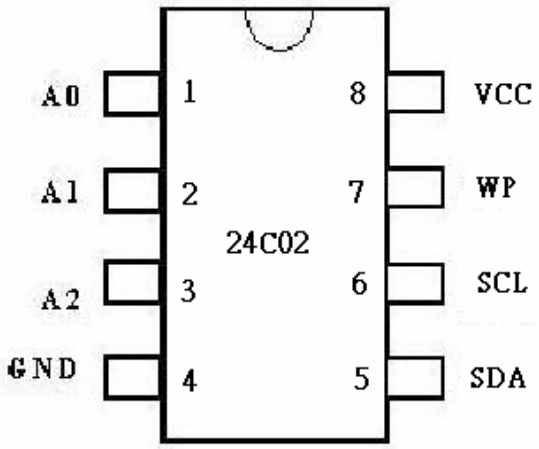
NOTE : MANUFACTURER'S NAME MUST BE ON THE PRINTED SIDE FOR THE INVERTER BOARD TO BE FACING UP .

7. IC PIN CONFIGURATION



U604

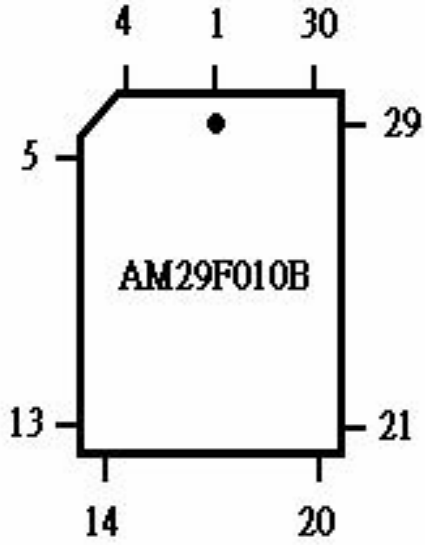
8-Pin PDIP



Pin Configurations

Pin Name	Function
A0 - A2	Address Inputs
SDA	Serial Data
SCL	Serial Clock Input
WP	Write Protect
NC	No Connect

U6



1.	NC	17.	DQ3
2.	A16	18.	DQ4
3.	A15	19.	DQ5
4.	A12	20.	DQ6
5.	A7	21.	DQ7
6.	A6	22.	CE#
7.	A5	23.	A10
8.	A4	24.	OE#
9.	A3	25.	A11
10.	A2	26.	A9
11.	A1	27.	A8
12.	A0	28.	A13
13.	DQ0	29.	A14
14.	DQ1	30.	NC
15.	DQ2	31.	WE#
16.	VSS	32.	VCC

TEST CONDITION : AC LINE IN: 110V/60Hz
PATTEN:FULL WHITE

Uint:Volt

IC	Q7(2N3904)			Q634(MMBT3906LT1)			Q635(2N3904)		
PIN / MODE	E	C	B	E	C	B	E	C	B
640*480 31K/60Hz	0	3.28	0.03	3.38	3.37	2.77	0	0.01	0.75
1024*768 60K/75Hz	0	3.27	0.03	3.38	3.37	2.77	0	0.01	0.75
1280*1024 80K/75Hz	0	3.28	0.03	3.38	3.37	2.77	0	0.01	0.75
DVI1280*1024 64K	0	3.27	0.03	3.38	3.37	2.76	0	0.01	0.75

IC	Q636(3906)			Q637(3906)			Q638(3906)		
PIN / MODE	E	C	B	E	C	B	E	C	B
640*480 31K/60Hz	2.00	1.96	1.28	3.38	0.06	3.38	3.38	3.38	2.77
1024*768 60K/75Hz	2.00	1.96	1.28	3.38	0.06	3.38	3.38	3.39	2.78
1280*1024 80K/75Hz	2.00	1.96	1.28	3.38	0.06	3.38	3.38	3.39	2.78
DVI1280*1024 64K	2.00	1.96	1.28	3.38	0.07	3.38	3.38	3.38	2.77

IC	Q639(2N3904)			Q641(2N3904)					
PIN / MODE	E	C	B	E	C	B	E	C	B
640*480 31K/60Hz	0	0.06	0.68	0	11.19	0.01			
1024*768 60K/75Hz	0	0.06	0.68	0	11.19	0.02			
1280*1024 80K/75Hz	0	0.06	0.68	0	11.19	0.02			
DVI1280*1024 64K	0	0.06	0.68	0	11.18	0.01			

IC	U4(GM5120)									
PIN / MODE	1	2	3	4	5	6	7	8	9	10
640*480 31K/60Hz	3.38	3.38	0	3.38	3.33	4.84	4.85	1.02	1.63	1.01
1024*768 60K/75Hz	3.38	3.38	0	3.38	3.33	4.84	4.85	0.80	1.85	0.80
1280*1024 80K/75Hz	3.38	3.38	0	3.38	3.33	4.84	4.85	0.80	1.85	0.80
DVI1280*1024 64K	3.38	3.38	0	3.38	3.33	5.01	5.01	0	0.09	0

IC	U4(GM5120)									
PIN / MODE	11	12	13	14	15	16	17	18	19	20
640*480 31K/60Hz	3.30	1.85	2.09	2.43	0.09	2.26	2.49	1.99	0.79	3.38
1024*768 60K/75Hz	3.29	1.61	1.70	2.55	0.09	2.49	2.61	2.16	0.65	3.38
1280*1024 80K/75Hz	3.30	1.85	1.70	2.55	0.09	2.49	2.68	2.16	0.65	3.38
DVI 1280*1024 64K	0	0	0	0.01	0.01	3.00	0	0	0	3.38

IC	U4(GM5120)									
PIN / MODE	21	22	23	24	25	26	27	28	29	30
640*480 31K/60Hz	0	2.50	1.38	1.56	1.45	2.45	0	2.43	3.00	3.59
1024*768 60K/75Hz	0	2.61	1.23	1.52	1.43	2.46	0	2.36	3.16	3.64
1280*1024 80K/75Hz	0	2.61	1.24	1.52	1.43	2.46	0	2.36	3.16	3.64
DVI 1280*1024 64K	0	3	1.50	1.50	1.50	2.45	0	3.93	3.36	3.36

IC	U4(GM5120)									
PIN / MODE	31	32	33	34	35	36	37	38	39	40
640*480 31K/60Hz	1.79	1.51	2.48	2.05	1.94	1.69	3.38	0	0.04	3.37
1024*768 60K/75Hz	1.82	1.42	2.29	2.05	1.74	1.69	3.38	0	0.04	3.37
1280*1024 80K/75Hz	1.83	1.41	2.39	2.05	1.75	1.69	3.38	0	0.04	3.37
DVI 1280*1024 64K	2.94	1.05	2.09	1.90	2.51	1.90	3.38	0	0.04	3.37

IC	U4(GM5120)									
PIN / MODE	41	42	43	44	45	46	47	48	49	50
640*480 31K/60Hz	1.90	0	0	0.11	5.08	3.38	3.38	0.03	3.38	5.12
1024*768 60K/75Hz	1.90	0	0	0.11	5.08	3.38	3.38	0.03	3.38	5.12
1280*1024 80K/75Hz	1.90	0	0	0.11	5.08	3.38	3.38	0.03	3.38	5.12
DVI 1280*1024 64K	1.89	0	0	0.11	5.12	3.38	3.37	0.03	3.38	5.12

IC	U4(GM5120)									
PIN / MODE	51	52	53	54	55	56	57	58	59	60
640*480 31K/60Hz	5.12	5.12	3.38	0	0	0	0.59	2.47	2.47	2.47
1024*768 60K/75Hz	5.12	5.12	3.38	0	0	0	0.61	2.59	2.59	2.59
1280*1024 80K/75Hz	5.12	5.12	3.38	0	0	0	0.61	2.59	2.59	2.59
DVI1280*1024 64K	5.12	5.12	3.38	0	0	0	0.66	2.54	2.55	2.54

IC	U4(GM5120)									
PIN / MODE	61	62	63	64	65	66	67	68	69	70
640*480 31K/60Hz	2.47	2.47	0	0	1.34	1.20	3.38	0	2.47	2.47
1024*768 60K/75Hz	2.59	2.59	0	0	1.52	1.05	3.38	0	2.59	2.59
1280*1024 80K/75Hz	2.59	2.59	0	0	1.60	0.95	3.38	0	2.59	2.59
DVI1280*1024 64K	2.47	2.56	0	0	0	0.66	3.38	0	2.55	2.54

IC	U4(GM5120)									
PIN / MODE	71	72	73	74	75	76	77	78	79	80
640*480 31K/60Hz	2.47	2.74	0	0	0.60	2.47	2.47	2.47	2.47	2.47
1024*768 60K/75Hz	2.59	2.59	0	0	0.63	2.59	2.58	2.59	2.58	2.59
1280*1024 80K/75Hz	2.59	2.59	0	0	0.63	2.59	2.59	2.59	2.58	2.59
DVI1280*1024 64K	2.47	2.56	0	0	0.67	2.55	2.55	2.55	2.47	2.56

IC	U4(GM5120)									
PIN / MODE	81	82	83	84	85	86	87	88	89	90
640*480 31K/60Hz	3.38	0	0	0	0.61	2.47	2.47	2.45	0	2.47
1024*768 60K/75Hz	3.38	0	0	0	0.64	2.59	2.59	2.45	0	2.58
1280*1024 80K/75Hz	3.38	0	0	0	0.64	2.60	2.60	2.46	0	2.59
DVI1280*1024 64K	3.38	0	0	0	0.68	2.48	2.55	2.45	0	2.54

IC	U4(GM5120)									
PIN / MODE	91	92	93	94	95	96	97	98	99	100
640*480 31K/60Hz	2.47	2.47	0	0	1.33	1.22	3.38	0	2.47	2.47
1024*768 60K/75Hz	2.58	2.58	0	0	1.50	1.03	3.38	0	2.57	2.57
1280*1024 80K/75Hz	2.59	2.59	0	0	1.60	0.91	3.38	0	2.59	2.59
DVI1280*1024 64K	2.47	2.56	0	0	0.64	2.54	3.38	0	2.55	2.54

IC	U4(GM5120)									
PIN / MODE	101	102	103	104	105	106	107	108	109	110
640*480 31K/60Hz	2.47	2.47	0	0	0.60	2.47	2.47	2.47	2.47	2.47
1024*768 60K/75Hz	2.57	2.57	0	0	0.63	2.58	2.58	2.58	2.57	2.57
1280*1024 80K/75Hz	2.59	2.59	0	0	0.63	2.59	2.59	2.59	2.59	2.59
DVI1280*1024 64K	2.47	2.56	0	0	0.67	2.55	2.55	2.54	2.47	2.56

IC	U4(GM5120)									
PIN / MODE	111	112	113	114	115	116	117	118	119	120
640*480 31K/60Hz	3.38	0	3.38	3.38	2.47	3.36	3.37	1.63	0.01	0.01
1024*768 60K/75Hz	3.38	0	3.38	3.38	2.57	3.36	3.37	1.62	0.02	0.01
1280*1024 80K/75Hz	3.38	0	3.38	3.38	2.59	3.36	3.37	1.62	0.02	0.01
DVI1280*1024 64K	3.38	0	0	3.38	2.57	3.36	3.37	1.64	0.01	0.01

IC	U4(GM5120)									
PIN MODE	121	122	123	124	125	126	127	128	129	130
640*480 31K/60Hz	3.38	0	0	0	0	0	0l06	0.06	3.38	0
1024*768 60K/75Hz	3.38	0	0	0	0	0	0.06	0.06	3.38	0
1280*1024 80K/75Hz	3.38	0	0	0	0	0	0.06	0.06	3.38	0
DVI1280*1024 64K	3.38	0	0	0	0	0	0.02	0.02	3.38	0

IC	U4(GM5120)									
PIN MODE	131	132	133	134	135	136	137	138	139	140
640*480 31K/60Hz	0	0	0	2.46	0	3.92	3.46	0	3.38	0
1024*768 60K/75Hz	0	0	0	2.46	0	0.14	0.40	0	3.38	0
1280*1024 80K/75Hz	0	0	0	2.46	0	0.13	0.45	0	3.38	0
DVI1280*1024 64K	0	0	0	2.46	0	0.13	0.13	0	3.38	0

IC	U4(GM5120)									
PIN MODE	141	142	143	144	145	146	147	148	149	150
640*480 31K/60Hz	3.38	1.01	0	3.38	0	3.38	0	3.38	0	3.38
1024*768 60K/75Hz	3.38	1.14	0	3.38	0	3.38	0	3.38	0	3.38
1280*1024 80K/75Hz	3.38	1.14	0	3.38	0	3.38	0	3.38	0	3.38
DVI1280*1024 64K	3.38	0.99	0	3.38	0	3.38	0	3.38	0	3.38

IC	U4(GM5120)									
PIN MODE	151	152	153	154	155	156	157	158	159	160
640*480 31K/60Hz	2.47	2.71	2.48	0	2.47	0	0	0	2.51	3.38
1024*768 60K/75Hz	2.47	2.71	2.48	0	2.48	0	0	0	2.51	3.38
1280*1024 80K/75Hz	2.47	2.71	2.47	0	2.46	0	0	0	2.51	3.38
DVI1280*1024 64K	2.48	2.68	2.46	0	2.46	0	0	0	0.01	3.38

IC	U4(GM5120)									
PIN MODE	161	162	163	164	165	166	167	168	169	170
640*480 31K/60Hz	0	0	0	3.38	0	0	0	3.38	0	0
1024*768 60K/75Hz	0	0	0	3.38	0	0	0	3.38	0	0
1280*1024 80K/75Hz	0	0	0	3.38	0	0	0	3.38	0	0
DVI1280*1024 64K	0	0	0	3.38	0	0	0	3.38	0	0

IC	U4(GM5120)									
PIN MODE	171	172	173	174	175	176	177	178	179	180
640*480 31K/60Hz	0	3.38	3.38	0	0	2.45	0	0	3.38	3.38
1024*768 60K/75Hz	0	3.38	3.38	0	0	2.46	0	0	3.38	3.38
1280*1024 80K/75Hz	0	3.38	3.38	0	0	2.47	0	0	3.38	3.38
DVI1280*1024 64K	0	3.38	3.38	2.43	0	2.46	0	0	3.04	3.04

IC	U4(GM5120)									
PIN MODE	181	182	183	184	185	186	187	188	189	190
640*480 31K/60Hz	3.38	2.46	0	0	3.38	3.38	3.38	2.46	0	0
1024*768 60K/75Hz	3.38	2.46	0	0	3.38	3.38	3.38	2.47	0	0
1280*1024 80K/75Hz	3.38	2.46	0	0	3.38	3.38	3.38	2.46	0	0
DVI1280*1024 64K	3.38	2.46	0	0	3.05	3.05	3.38	2.46	0	0

IC	U4(GM5120)									
PIN MODE	191	192	193	194	195	196	197	198	199	200
640*480 31K/60Hz	3.38	3.38	3.38	3.38	3.38	3.38	0	0	2.48	0.06
1024*768 60K/75Hz	3.38	3.38	3.38	3.38	3.38	3.38	0	0	2.48	0.06
1280*1024 80K/75Hz	3.38	3.38	3.38	3.38	3.38	3.38	0	0	2.48	0.06
DVI1280*1024 64K	3.05	3.05	3.38	3.06	3.05	3.38	0	0	2.48	0.02

IC	U4(GM5120)							
PIN MODE	201	202	203	204	205	206	207	208
640*480 31K/60Hz	0	0	2.46	0	3.38	3.38	0	0
1024*768 60K/75Hz	0	0	2.46	0	3.38	3.38	0	0
1280*1024 80K/75Hz	0	0	2.46	0	3.38	3.38	0	0
DVI1280*1024 64K	0	0	2.46	0.06	3.38	3.38	0	0

IC	U5 (24C16)							
PIN MODE	1	2	3	4	5	6	7	8
640*480 31K/60Hz	0	0	0	0	5.12	5.12	0	5.13
1024*768 60K/75Hz	0	0	0	0	5.12	5.12	0	5.13
1280*1024 80K/75Hz	0	0	0	0	5.12	5.12	0	5.13
DVI1280*1024 64K	0	0	0	0	5.12	5.12	0	5.12

IC	U6 (AM29FF10B-70TC)										
PIN / MODE	1	2	3	4	5	6	7	8	9	10	11
640*480 31K/60Hz	0	0	1.02	3.30	2.35	2.50	1.97	0.80	2.51	1.37	1.55
1024*768 60K/75Hz	0	0	0.81	3.29	2.50	2.60	2.15	0.65	2.62	1.24	1.51
1280*1024 80K/75Hz	0	0	0.81	3.29	2.50	2.60	2.15	0.65	2.61	1.24	1.52
DVI1280*1024 64K	0	0	0	0	0	0.02	0	0	3.00	1.50	1.50

IC	U6 (AM29FF10B-70TC)										
PIN / MODE	12	13	14	15	16	17	18	19	20	21	22
640*480 31K/60Hz	1.45	1.95	2.07	2.49	2.50	1.51	1.79	3.55	3.02	2.44	0
1024*768 60K/75Hz	1.43	1/73	2.06	2.40	2.40	1.42	1.83	3.65	3.15	2.37	0
1280*1024 80K/75Hz	1.43	1.76	2.06	2.40	2.40	1.40	1.81	3.65	3.16	2.36	0
DVI1280*1024 64K	1.50	2.27	2.28	3.34	0	3.33	1.71	2.85	3.36	3.93	0

IC	U6 (AM29FF10B-70TC)									
PIN / MODE	23	24	25	26	27	28	29	30	31	32
640*480 31K/60Hz	2.11	1.69	1.60	2.45	0.09	0.90	1.61	0	5.13	5.13
1024*768 60K/75Hz	1.68	1.69	1.86	2.56	0.09	0.80	1.86	0	5.13	5.13
1280*1024 80K/75Hz	1.68	1.69	1.85	2.56	0.09	0.80	1.84	0	5.13	5.13
DVI1280*1024 64K	0	1.88	0	0.01	0.01	0	0.09	3.38	5.12	5.13

IC	U10 (74F14D)									
PIN / MODE	1	2	3	4	5	6	7	8	9	10
640*480 31K/60Hz	4.87	0.15	0.15	3.87	1.61	0.13	0	0.13	1.60	3.43
1024*768 60K/75Hz	0.09	3.87	3.87	0.15	1.61	0.13	0	0.13	1.60	0.41
1280*1024 80K/75Hz	0.09	3.87	3.87	0.14	1.61	0.13	0	0.13	1.60	0.43
DVI1280*1024 64K	1.44	3.93	3.93	0.12	1.58	0.12	0	0.12	1.58	0.12

IC	U10 (74F14D)			
PIN / MODE	11	12	13	14
640*480 31K/60Hz	0	0.58	4.31	5.13
1024*768 60K/75Hz	0	3.60	0.42	5.13
1280*1024 80K/75Hz	0	3.56	0.48	5.13
DVI1280*1024 64K	3.93	3.93	1.44	5.14

IC	U11 (SN75LVDS83)									
PIN / MODE	1	2	3	4	5	6	7	8	9	10
640*480 31K/60Hz	3.38	2.47	2.47	0	0	0	0.90	2.47	3.38	2.47
1024*768 60K/75Hz	3.38	2.58	2.58	0	0	0	1.20	2.58	3.38	2.58
1280*1024 80K/75Hz	3.38	2.58	2.58	0	0	0	1.41	2.59	3.38	2.59
DVI1280*1024 64K	3.38	2.56	2.55	0	0	0	0.67	2.47	3.38	2.56

IC	U11 (SN75LVDS83)									
PIN / MODE	11	12	13	14	15	16	17	18	19	20
640*480 31K/60Hz	1.45	2.47	0	2.47	0	2.47	0	2.47	0	0.61
1024*768 60K/75Hz	1.45	2.58	0	2.57	0	2.59	0	2.58	0	0.64
1280*1024 80K/75Hz	1.21	2.58	0	2.58	0	2.58	0	2.58	0	0.64
DVI1280*1024 64K	2.55	2.56	0	2.55	0	2.47	0	2.56	0	0.68

IC	U11 (SN75LVDS83)									
PIN / MODE	21	22	23	24	25	26	27	28	29	30
640*480 31K/60Hz	0	2.47	2.47	2.47	0	3.38	3.36	3.37	0	2.47
1024*768 60K/75Hz	0	2.59	2.57	2.58	0	3.38	3.36	3.37	0	2.59
1280*1024 80K/75Hz	0	2.59	2.59	2.58	0	3.38	3.36	3.37	0	2.59
DVI1280*1024 64K	0	2.55	2.55	2.55	0	3.38	3.36	3.37	0	2.57

IC	U11 (SN75LVDS83)									
PIN / MODE	31	32	33	34	35	36	37	38	39	40
640*480 31K/60Hz	1.61	3.27	0	3.38	0	0	1.26	1.18	1.24	1.19
1024*768 60K/75Hz	1.61	3.27	0	3.38	0	0	1.27	1.18	1.24	1.19
1280*1024 80K/75Hz	1.61	3.27	0	3.38	0	0	1.27	1.18	1.24	1.19
DVI1280*1024 64K	1.64	3.28	0	3.38	0	0	1.28	1.18	1.24	1.19

IC	U11 (SN75LVDS83)									
PIN / MODE	41	42	43	44	45	46	47	48	49	50
640*480 31K/60Hz	1.28	1.13	0	3.38	1.16	1.29	1.16	1.27	0	2.47
1024*768 60K/75Hz	1.29	1.12	0	3.38	1.17	1.29	1.17	1.27	0	2.57
1280*1024 80K/75Hz	1.29	1.12	0	3.38	1.17	1.29	1.17	1.27	0	2.59
DVI1280*1024 64K	1.30	1.14	0	3.38	1.17	1.29	1.16	1.27	0	2.47

IC	U11 (SN75LVDS83)					
PIN / MODE	51	52	53	54	55	56
640*480 31K/60Hz	0	0	0	0.59	2.47	2.47
1024*768 60K/75Hz	0	0	0	0.61	2.58	2.58
1280*1024 80K/75Hz	0	0	0	0.61	2.60	2.59
DVI1280*1024 64K	0	0	0	0.66	2.55	2.55

IC	U12 (SN75LVDS83)									
PIN / MODE	1	2	3	4	5	6	7	8	9	10
640*480 31K/60Hz	3.38	2.47	2.47	0	0	0	1.02	2.47	3.38	2.47
1024*768 60K/75Hz	3.38	2.58	2.58	0	0	0	1.30	2.59	3.38	2.58
1280*1024 80K/75Hz	3.38	2.58	2.59	0	0	0	1.53	2.58	3.38	2.59
DVI1280*1024 64K	3.38	2.56	2.55	0	0	0	0.65	2.47	3.38	2.56

IC	U12 (SN75LVDS83)									
PIN / MODE	11	12	13	14	15	16	17	18	19	20
640*480 31K/60Hz	1.34	2.47	0	2.47	0	2.47	0	2.47	0	0.69
1024*768 60K/75Hz	1.29	2.58	0	2.58	0	2.58	0	2.58	0	0.63
1280*1024 80K/75Hz	1.08	2.58	0	2.58	0	2.57	0	2.59	0	0.63
DVI1280*1024 64K	2.55	2.55	0	2.54	0	2.47	0	2.56	0	0.67

IC	U12 (SN75LVDS83)									
PIN / MODE	21	22	23	24	25	26	27	28	29	30
640*480 31K/60Hz	0	2.47	2.47	2.47	0	3.38	3.36	3.37	0	2.47
1024*768 60K/75Hz	0	2.59	2.59	2.59	0	3.38	3.36	3.37	0	2.57
1280*1024 80K/75Hz	0	2.59	2.59	2.59	0	3.38	3.36	3.37	0	2.59
DVI1280*1024 64K	0	2.55	2.55	2.54	0	3.38	3.36	3.37	0	2.57

IC	U12 (SN75LVDS83)									
PIN / MODE	31	32	33	34	35	36	37	38	39	40
640*480 31K/60Hz	1.63	3.27	2.47	2.47	0	3.38	1.26	1.18	1.23	1.19
1024*768 60K/75Hz	1.61	3.27	2.59	2.59	0	3.38	1.27	1.17	1.23	1.19
1280*1024 80K/75Hz	1.61	3.27	2.59	2.59	0	3.38	1.27	1.17	1.23	1.19
DVI1280*1024 64K	1.63	3.28	2.55	2.54	0	3.38	1.26	1.16	1.24	1.19

IC	U12 (SN75LVDS83)									
PIN / MODE	41	42	43	44	45	46	47	48	49	50
640*480 31K/60Hz	1.28	1.13	0	3.38	1.15	1.28	1.15	1.27	0	2.47
1024*768 60K/75Hz	1.29	1.12	0	3.38	1.16	1.28	1.15	1.27	0	2.58
1280*1024 80K/75Hz	1.29	1.12	0	3.38	1.16	1.28	1.16	1.27	0	2.58
DVI1280*1024 64K	1.30	1.13	0	3.38	1.16	1.26	1.16	1.27	0	2.47

IC	U12 (SN75LVDS83)					
PIN / MODE	51	52	53	54	55	56
640*480 31K/60Hz	0	0	0	0.62	2.47	2.47
1024*768 60K/75Hz	0	0	0	0.64	2.58	2.58
1280*1024 80K/75Hz	0	0	0	0.64	2.58	2.58
DVI1280*1024 64K	0	0	0	0.68	2.55	2.55

IC	U602 (PST9129N)				
PIN / MODE	1	2	3	4	5
640*480 31K/60Hz	0	0	0	3.34	3.37
1024*768 60K/75Hz	0	0	0	3.34	3.37
1280*1024 80K/75Hz	0	0	0	3.34	3.37
DVI1280*1024 64K	0	0	0	3.34	3.37

IC	U603 (24C02)							
PIN / MODE	1	2	3	4	5	6	7	8
640*480 31K/60Hz	0	0	0	0	4.85	4.85	4.84	4.85
1024*768 60K/75Hz	0	0	0	0	4.85	4.85	4.85	4.85
1280*1024 80K/75Hz	0	0	0	0	4.85	4.85	4.85	4.85
DVI1280*1024 64K	0	0	0	0	5.01	5.01	5.01	5.01

IC	U604 (24C02)							
PIN / MODE	1	2	3	4	5	6	7	8
640*480 31K/60Hz	0	0	0	0	0.01	5.08	0	4.67
1024*768 60K/75Hz	0	0	0	0	0.01	5.08	0	4.67
1280*1024 80K/75Hz	0	0	0	0	0.01	5.08	0	4.67
DVI1280*1024 64K	0	0	0	0	5.12	5.12	0	5.06

IC	U605 (A04800)							
PIN / MODE	1	2	3	4	5	6	7	8
640*480 31K/60Hz	5.08	11.19	2.49	3.88	3.38	3.38	5.10	5.10

1024*768 60K/75Hz	5.08	11.19	2.49	3.89	3.38	3.38	5.10	5.10
1280*1024 80K/75Hz	5.08	11.19	2.49	3.89	3.38	3.38	5.10	5.10
DVI1280*1024 64K	5.08	11.18	2.48	3.87	3.37	3.37	5.10	5.10

PARTS LIST

ITEM	PART NUMBER	DESCRIPTION
1	AC1721-B02	MAIN PCBA
2	DC1721-B01	POWER PCBA
3	TC1720-D05	INVERTER PCBA
4	GC1722-A02	DISPLAY PCBA
5	10A17-4A2A	LCD TFT 1280*1024 (M170EN05 v.1)
6	0800064018	CABINET BACK
7	0820111002	CABINET FRONT
8	SSBASE-504	SUB ASSY BASE
9	NL	ADAPTER ON BOARD
10	0400781300	CARTON 480*114*540
11	0510162800	HOLDER E.P.S. (L)
12	0510163800	HOLDER E.P.S. (R)
13	0540045A00	PE BAG 650*505MM
14	0620788100	USER MANUAL(S720G/S730G)
15	05Z0001900	PLASTIC HANDLE BAR
16	05Z0002900	PLASTIC CLAP BOARD